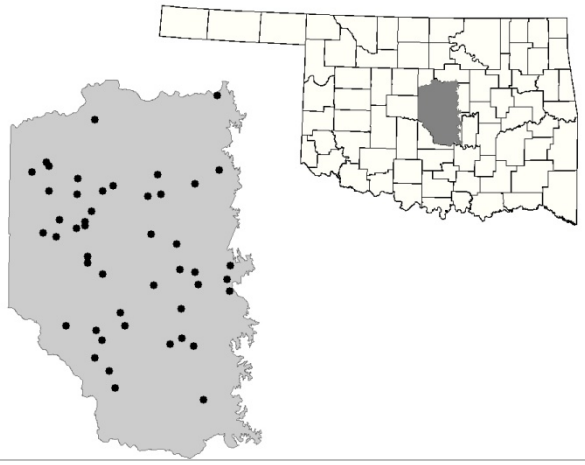
Garber Wellington Aquifer

Baseline Sample Period	Sampling Sites	Water Level Sites
October-November 2013	47	61



General		
	Location	Central Oklahoma
	Area (km^2)	7,493
	Storage (acre-feet)	58,000,000
	Primary Uses	Municipal & Domestic Supply; Industrial
	Category	Bedrock-Sandstone

Parameters	General Field	Parameter	Mean	SEM	Minimum	25%	Median	75%	Maximum	Comments
		Well Depth (ft)	192	7.6	43	155	200	220	380	N=65
		Depth to Water (ft)	77.30	5.53	20.19	50.51	69.94	89.78	228.10	Below ground surface
		Temperature (°C)	17.39	0.229	13.61	16.33	17.25	18.89	20.07	
		Specific Conductance (µS/cm)	728	73.04	233	472	617	821	2550	
		Dissolved Oxygen (mg/L)	4.89	0.337	0.3	3.25	4.91	6.92	8.58	
		pH (units)	6.95	0.075	5.82	6.81	6.97	7.16	8.85	
		Alkalinity (mg/L)	268	14.8	44.0	214	284	326	450	
		Hardness (mg/L)	278	30.1	31.0	137	261	326	1273	N=46
		Calculated Bicarbonate (mg/L)	322	18.2	54.3	263	350	400	554	
		Total Dissolved Solids (mg/L)	419	53.0	123	244	328	447	2150	SMCL: 500; 9 over

Parameters	Nutrient Constituents	Parameter	Mean	SEM	Minimum	25%	Median	75%	Maximum	Comments
		Nitrate & Nitrite (mg/L)	1.84	0.399	<0.05	0.415	0.89	2.17	14.8	MCL: 10; 1 over
		Total Dissolved Phosphorus (mg/L)	0.019	0.0049	<0.005	<0.005	<0.005	0.0205	0.156	

Parameters	Mineral Constituents	Parameter	Mean	SEM	Minimum	25%	Median	75%	Maximum	Comments
		Bromide (µg/L)	425	42.9	139	272	335	486	1820	
		dissolved Calcium (mg/L)	60.8	8.84	<5	26.4	55.6	73.7	409	
		Chloride (mg/L)	47.0	11.8	<10	11.4	18.8	46.8	448	SMCL: 250; 2 over
		Fluoride (mg/L)	0.194	0.028	<0.2	<0.2	<0.2	0.23	0.99	MCL: 4; 0 over
		dissolved Magnesium (mg/L)	28.6	2.62	<5	13.3	27.9	34.8	79.1	
		dissolved Potassium (mg/L)	1.52	0.106	<0.5	1.0	1.2	2.05	3.6	
		dissolved Silica (mg/L)	18.6	0.632	10.1	16	17.8	21.4	30.3	
		dissolved Sodium (mg/L)	63.5	10.0	7.2	15.1	31.8	85.7	318	
		Sulfate (mg/L)	59.3	24.7	<10	7.85	17.4	26.5	1090	SMCL: 250; 2 over

Parameters	Metal & Trace Element Constituents	Parameter	Mean	SEM	Minimum	25%	Median	75%	Maximum	Comments
		dissolved Arsenic (µg/L)	All Values <10, except 1 (11.8)							MCL: 10; 1 over
		dissolved Barium (µg/L)	302	32.6	<10	119	242	457	923	MCL: 2000; 0 over
		dissolved Boron (µg/L)	253	65.7	<50	55.6	88.0	158	2450	HA: 6000; 0 over
		dissolved Chromium (µg/L)	All Values <5, except 3 (16.3,16.5,24.4)							MCL: 100; 0 over
		dissolved Copper (µg/L)	11.0	2.19	<5	<5	<5	12.0	75.6	MCL: 1300; 0 over
		dissolved Iron (µg/L)	All Values <50, except 5 (69.4,81.1,93,109,136)							SMCL: 300; 0 over
		Dissolved Lead (µg/L)	All Values <10, except 1 (12.7)							MCL: 15; 0 over
		dissolved Manganese (µg/L)	All Values <50, except 1 (405)							SMCL: 50; 1 over. HA: 300; 1 over
		dissolved Selenium (µg/L)	All Values <20, except 2 (28.4,30.8)							MCL: 50; 0 over
		dissolved Uranium (µg/L)	5.20	1.45	<1	<1	1.5	4.3	57.0	MCL: 30; 1 over
		dissolved Vanadium (µg/L)	50.7	7.38	<10	13.6	52.6	65.9	296	
		dissolved Zinc (µg/L)	27.7	5.48	<10	<10	<10	34.3	184	SMCL: 5000; 0 over. HA: 2000; 0 over

Parameters	Parameters Below Detectable Limits				
		Aluminum Ammonia Antimony	Beryllium Cadmium Cobalt	Mercury Molybdenum Nickel	Silver Thallium

SEM = Standard Error of the Mean
MCL = EPA's Maximum Contaminant Level – enforced for public drinking water systems
SMCL = EPA's Secondary MCL – guidelines not enforced
HA = EPA's Health Advisory

Note: Groundwater samples collected for GMAP were filtered in the field, resulting in dissolved concentrations of constituents. The total concentration for any given constituent might be higher for an unfiltered sample from the same source.